

## WHAT IS CLAIMED IS:

1. ATM (asynchronous switching mode) edge node switching equipment that is connected to plural user terminals in an ATM network, comprising:

an IP (Internet protocol) data packet distribution function,  
 5 which distributes each of IP data packets to each of said plural user terminals, by utilizing an IP-VPN (Internet protocol-virtual private network) function by using a destination IP address of each of said plural user terminals, wherein:

said IP-VPN function, comprising:

10 an inputted IP data packet analyzing section that obtains an input VC (virtual channel) number and also obtains a VPN-ID (virtual private network-identifier) for distinguishing each of said user terminals, a QOS (quality of service) type set by QOS information composed of a protocol type, a destination service port number, a source address service  
 15 port number, and a code point, from a header part of said IP data packet transferred from one of said user terminals; and

a routing information retrieving section that retrieves a routing of a VC for a destination address by using said destination IP address, said VPN-ID, and said QOS type, and sets said routing of said VC for said  
 20 destination address.

2. ATM edge node switching equipment that is connected to plural user terminals in an ATM network in accordance with claim 1, wherein:

a leased line between each of said plural user terminals and  
 5 said ATM edge node switching equipment is at least one, and said leased line is a virtual private network of a layer 2 in an OSI (open system interconnection) referring model.

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3. ATM edge node switching equipment that is connected to plural user terminals in an ATM network in accordance with claim 1, wherein:

5 said inputted IP data packet analyzing section defines said QOS type as 8 types corresponding to discarding an illegal cell (IP data packet), tagging trouble, and transmission delayed time.

4. ATM edge node switching equipment that is connected to plural user terminals in an ATM network, and is connected to one user terminal with at least one virtual leased line, comprising:

5 an input VC (virtual channel) to which an IP data packet having a VPN-ID is inputted from each of said plural user terminals;

an inputted IP data packet analyzing section for analyzing a header part of said inputted IP data packet;

10 a user information memory that stores an input VC number, a VPN-ID, a QOS type set by QOS information composed of a protocol type, a destination service port number, a source address service port number, and a code point being a differentiated service, and that is used when said inputted IP data packet analyzing section analyzes said inputted IP data packet;

15 a routing information retrieving section that retrieves and sets a routing of said IP data packet for said destination address based on a analyzed result at said inputted IP data packet analyzing section; and

20 a routing information memory that stores a destination IP address, plural output VCs, an output VC state showing the state of said plural VCs, said QOS type, and said VPN-ID, and that is used when said routing information retrieving section retrieves and sets said routing, wherein:

said IP data packet is transferred to said destination address in said ATM network by changing said header part of said IP data packet.

5. ATM edge node switching equipment that is connected to plural user terminals in an ATM network, and is connected to one user terminal with at least one virtual leased line, in accordance with claim 4, further comprising:

5 a VC control unit that always monitors a state of said VCs and notifies said state being a trouble or not to said routing information retrieving section when said routing information retrieving section retrieves and sets said routing;

10 a network control unit that controls equipment connected to said ATM network and a congestion state of said ATM network; and

a command analyzing section that analyzes commands from said network control unit.

6. ATM edge node switching equipment that is connected to plural user terminals in an ATM network, and is connected to one user terminal with at least one virtual leased line, in accordance with claim 4, wherein:

5 said analyzed result at said inputted IP data packet analyzing section provides said VPN-ID and said QOS type, and said routing information retrieving section discards said IP data packet when said routing information retrieving section obtains the occurrence of some trouble in said VC base on said output VC state, and

10 in case that plural output VCs exist to said destination address, said routing information retrieving section selects a suitable VC based on the priority and transfers said IP data packet to said destination address through said selected VC.